



# ***STIC Search Report***

***EIC 1700***

**STIC Database Tracking Number: 153241**

**TO: Helen Pezzuto**

**Location: 10A29**

**Art Unit : 1713**

**May 19, 2005**

**Case Serial Number: 10/732934**

**From: Kathleen Fuller**

**Location: EIC 1700**

**REMSEN 4B28**

**Phone: 571/272-2505**

**Kathleen.Fuller@uspto.gov**

## **Search Notes**



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713  
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: HELEN PIZZUTO Examiner #: 71058 Date: 5/10/05  
Art Unit: 1413 Phone Number: 301-1108 Serial Number: 10/732,934  
Mail Box and Bldg/Room Location: REM 10429 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.  
\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See ATTACHED SCIENTIFIC REFERENCE BR  
Inventors (please provide full names): ↓ Sci & Tech Inf. Ctr.

MAY 12 REC'D

Earliest Priority Filing Date: 12/23/02 Pat. & T.M. Office

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Search method or utility of poly(N-isopropyl acrylamide) to inhibit protein deposition or adsorption on "medical device" → claim 8  
See key words in 21-212 in WEST search attached.

I have come across some refs. on using NIPAM polymers to study protein adsorption on generic "laboratory" surfaces (i.e. glass, polystyrene), not much on "medical device" like contact lens.  
Thanks!

\*\*\*\*\*  
**STAFF USE ONLY**

Searcher: <u>K. Faller</u>	Type of Search	Vendors and cost where applicable
Searcher Phone #: _____	NA Sequence (#) _____	STN <u>✓</u>
Searcher Location: _____	AA Sequence (#) _____	Dialog _____
Date Searcher Picked Up: _____	Structure (#) _____	Questel/Orbit _____
Date Completed: <u>5/19/05</u>	Bibliographic <u>✓</u>	Dr. Link _____
Searcher Prep & Review Time: <u>40</u>	Litigation _____	Lexis/Nexis _____
Clerical Prep Time: _____	Fulltext _____	Sequence Systems _____
Online Time: <u>68</u>	Patent Family _____	WWW/Internet _____
	Other _____	Other (specify) _____

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 12:17:06 ON 19 MAY 2005

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FILE COVERS 1907 - 19 May 2005 VOL 142 ISS 21

FILE LAST UPDATED: 18 May 2005 (20050518/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 155

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/BI  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L45 27 SEA FILE=HCAPLUS ABB=ON L43 AND PROTEIN? AND (MEDICAL? OR  
LENS? OR STENT# OR CATHETER? OR PROSTHET?)  
L48 2 SEA FILE=HCAPLUS ABB=ON L45 AND SURFACE? (3A) PROTEIN?  
L51 21 SEA FILE=HCAPLUS ABB=ON L43 AND (INHIBIT? OR PREVENT? OR  
DEPOSIT? OR FORMATION? OR FORM OR FORMED OR FORMING OR  
ABSOR?) (3A) PROTEIN?  
L52 4 SEA FILE=HCAPLUS ABB=ON L45 AND L51  
L53 5 SEA FILE=HCAPLUS ABB=ON L48 OR L52  
L54 7 SEA FILE=HCAPLUS ABB=ON L51 AND PHARMACE?/SC, SX  
L55 9 SEA FILE=HCAPLUS ABB=ON L53 OR L54

=> file medline

FILE 'MEDLINE' ENTERED AT 12:17:27 ON 19 MAY 2005

FILE LAST UPDATED: 18 MAY 2005 (20050518/UP). FILE COVERS 1950 TO DATE.

On December 19, 2004, the 2005 MeSH terms were loaded.

The MEDLINE reload for 2005 is now available. For details enter HELP RLOAD at an arrow prompt (=>). See also:

<http://www.nlm.nih.gov/mesh/>

[http://www.nlm.nih.gov/pubs/techbull/nd04/nd04\\_mesh.html](http://www.nlm.nih.gov/pubs/techbull/nd04/nd04_mesh.html)

OLDMEDLINE now back to 1950.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2005 vocabulary.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d que 160

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L60 2 SEA FILE=MEDLINE ABB=ON L43 AND (INHIBIT? OR PREVENT? OR  
DEPOSIT? OR FORMATION? OR FORM OR FORMED OR FORMING OR  
ABSOR?) (3A) PROTEIN?

=> file wpix

FILE ~~WPIX~~ ENTERED AT 12:17:41 ON 19 MAY 2005  
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FILE LAST UPDATED: 17 MAY 2005 <20050517/UP>  
MOST RECENT DERWENT UPDATE: 200531 <200531/DW>  
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,  
PLEASE VISIT:  
[http://www.stn-international.de/training\\_center/patents/stn\\_guide.pdf](http://www.stn-international.de/training_center/patents/stn_guide.pdf) <<<

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>>> NEW! FAST-ALERTING ACCESS TO NEWLY-PUBLISHED PATENT  
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FIRST VIEW - FILE WPIFV.  
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>>> THE CPI AND EPI MANUAL CODES HAVE BEEN REVISED FROM UPDATE 200501.  
PLEASE CHECK:  
<http://thomsonderwent.com/support/dwpioref/reftools/classification/code-revision/>  
FOR DETAILS. <<<

=> d que 165

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L61 1 SEA FILE=WPIX ABB=ON L43 AND (INHIBIT? OR PREVENT? OR  
DEPOSIT? OR FORMATION? OR FORM OR FORMED OR FORMING OR  
ABSOR?) (3A) PROTEIN?  
L62 2 SEA FILE=WPIX ABB=ON (NIPAM OR ?ACRYAMIDE?) AND (INHIBIT? OR

PREVENT? OR DEPOSIT? OR FORMATION? OR FORM OR FORMED OR  
FORMING OR ABSOR?) (3A) PROTEIN?

L63 1 SEA FILE=WPIX ABB=ON L62 AND A61L?/IC  
L64 3 SEA FILE=WPIX ABB=ON (NIPAM OR ?ACRYAMIDE?) AND A61L?/IC  
L65 3 SEA FILE=WPIX ABB=ON L61 OR L63 OR L64

=> file embase

FILE 'EMBASE' ENTERED AT 12:17:53 ON 19 MAY 2005  
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FILE COVERS 1974 TO 12 May 2005 (20050512/ED)

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=> d que 168

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L68 2 SEA FILE=EMBASE ABB=ON L43 AND PROTEIN? AND (MEDICAL? OR  
LENS? OR STENT# OR CATHETER? OR PROSTHET?)

=> file biosis

FILE 'BIOSIS' ENTERED AT 12:18:11 ON 19 MAY 2005  
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FILE COVERS 1969 TO DATE.

CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT  
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 18 May 2005 (20050518/ED)

FILE RELOADED: 19 October 2003.

=> d que 172

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L70 4 SEA FILE=BIOSIS ABB=ON L43 AND (INHIBIT? OR PREVENT? OR  
DEPOSIT? OR FORMATION? OR FORM OR FORMED OR FORMING OR  
ABSOR?) (3A) PROTEIN?  
L71 2 SEA FILE=BIOSIS ABB=ON L43 AND PROTEIN? AND (MEDICAL? OR  
LENS? OR STENT# OR CATHETER? OR PROSTHET?)  
L72 6 SEA FILE=BIOSIS ABB=ON L70 OR L71

=> file uspatful

FILE 'USPATFULL' ENTERED AT 12:18:25 ON 19 MAY 2005

KATHLEEN FULLER EIC 1700 REMSON 4B28 571/272-2505

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FILE COVERS 1971 TO PATENT PUBLICATION DATE: 17 May 2005 (20050517/PD)  
FILE LAST UPDATED: 17 May 2005 (20050517/ED)  
HIGHEST GRANTED PATENT NUMBER: US6895596  
HIGHEST APPLICATION PUBLICATION NUMBER: US2005102725  
CA INDEXING IS CURRENT THROUGH 17 May 2005 (20050517/UPCA)  
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 17 May 2005 (20050517/PD)  
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Apr 2005  
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Apr 2005

>>> USPAT2 is now available. USPATFULL contains full text of the <<<  
>>> original, i.e., the earliest published granted patents or <<<  
>>> applications. USPAT2 contains full text of the latest US <<<  
>>> publications, starting in 2001, for the inventions covered in <<<  
>>> USPATFULL. A USPATFULL record contains not only the original <<<  
>>> published document but also a list of any subsequent <<<  
>>> publications. The publication number, patent kind code, and <<<  
>>> publication date for all the US publications for an invention <<<  
>>> are displayed in the PI (Patent Information) field of USPATFULL <<<  
>>> records and may be searched in standard search fields, e.g., /PN, <<<  
>>> /PK, etc. <<<

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>>> through the new cluster USPATALL. Type FILE USPATALL to <<<  
>>> enter this cluster. <<<  
>>> <<<  
>>> Use USPATALL when searching terms such as patent assignees, <<<  
>>> classifications, or claims, that may potentially change from <<<  
>>> the earliest to the latest publication. <<<

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substance identification.

=> d que 174

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L73 188 SEA FILE=USPATFULL ABB=ON L41  
L74 0 SEA FILE=USPATFULL ABB=ON L73 (6A) (MEDICAL? OR LENS OR STENT#  
OR CATHETER? OR LENSES OR PROSTHE?)

=> => file rapra

FILE 'RAPRA' ENTERED AT 12:24:44 ON 19 MAY 2005  
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FILE LAST UPDATED: 17 MAY 2005 <20050517/UP>  
FILE COVERS 1972 TO DATE

>>> Simultaneous left and right truncation is available in the  
basic index (/BI), and in the controlled term (/CT),  
geographical term (/GT), and non-polymer term (/NPT) fields. <<<

>>> The RAPRA Classification Code is available as a PDF file  
>>> and may be downloaded free-of-charge from:  
>>> [http://www.stn-international.de/stndatabases/details/rapra\\_classcodes.pdf](http://www.stn-international.de/stndatabases/details/rapra_classcodes.pdf)

=> d que 183

L40 12 SEA FILE=REGISTRY ABB=ON (10043-35-3/BI OR 106392-12-5/BI OR  
110617-70-4/BI OR 13840-56-7/BI OR 139-33-3/BI OR 25189-55-3/BI  
OR 50-70-4/BI OR 57-55-6/BI OR 717133-84-1/BI OR 717133-87-4/B  
I OR 7647-14-5/BI OR 994-36-5/BI)  
L41 1 SEA FILE=REGISTRY ABB=ON L40 AND PROPENAMID?  
L42 1631 SEA FILE=HCAPLUS ABB=ON L41  
L43 1926 SEA FILE=HCAPLUS ABB=ON L42 OR NIPAM  
L70 4 SEA FILE=BIOSIS ABB=ON L43 AND (INHIBIT? OR PREVENT? OR  
DEPOSIT? OR FORMATION? OR FORM OR FORMED OR FORMING OR  
ABSOR?) (3A) PROTEIN?  
L71 2 SEA FILE=BIOSIS ABB=ON L43 AND PROTEIN? AND (MEDICAL? OR  
LENS? OR STENT# OR CATHETER? OR PROSTHET?)  
L76 3 SEA FILE=RAPRA ABB=ON L70 OR L71  
L81 2 SEA FILE=RAPRA ABB=ON (NIPAM OR ?ACRYAMIDE?) AND (INHIBIT? OR  
PREVENT? OR DEPOSIT? OR FORMATION? OR FORM OR FORMED OR  
FORMING OR ABSOR?) (3A) PROTEIN?  
L83 3 SEA FILE=RAPRA ABB=ON L76 OR L81

=> dup rem 155 160 165 168 172 183

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PROCESSING COMPLETED FOR L55  
PROCESSING COMPLETED FOR L60  
PROCESSING COMPLETED FOR L65  
PROCESSING COMPLETED FOR L68  
PROCESSING COMPLETED FOR L72  
PROCESSING COMPLETED FOR L83

L84 20 DUP REM L55 L60 L65 L68 L72 L83 (5 DUPLICATES REMOVED)

=> d l84 all 1-20

L84 ANSWER 1 OF 20 EMBASE COPYRIGHT 2005 ELSEVIER INC. ALL RIGHTS RESERVED.  
on STN DUPLICATE 1  
AN 2004309896 EMBASE  
TI Glucose permeable poly (dimethyl siloxane) poly (N-isopropyl acrylamide)  
interpenetrating networks as ophthalmic biomaterials.  
AU Liu L.; Sheardown H.  
CS H. Sheardown, Departments of Chemical Engineering, McMaster University,  
1280 Main St. West, Hamilton, Ont. L8S 4L7. sheadow@mcmaster.ca  
SO Biomaterials, (2005) Vol. 26, No. 3, pp. 233-244.  
Refs: 33  
ISSN: 0142-9612 CODEN: BIMADU

KATHLEEN FULLER EIC 1700 REMSON 4B28 571/272-2505



PUI S 0142-9612(04)00164-4

CY United Kingdom

DT Journal; Article

FS 012 Ophthalmology

027 Biophysics, Bioengineering and Medical Instrumentation

039 Pharmacy

LA English

SL English

ED Entered STN: 20040819

Last Updated on STN: 20040819

AB Poly (dimethyl siloxane) (PDMS) has been widely used as a biomaterial in ophthalmic and other applications due to its good compatibility, high mechanical strength, excellent oxygen permeability and transparency. However, for use as an artificial cornea, contact lens and in other applications, modifications with hydrophilic functional groups or polymers are necessary to improve wettability for tear protein and mucin interactions and to improve glucose permeability for cellular health. Poly (N-isopropyl acrylamide) (PNIPAAM) is a biocompatible and hydrophilic polymer that has been extensively studied on controlled drug release applications due to its lower critical solution temperature (LCST) phenomenon. In the current work, a composite interpenetrating network (IPN) of PDMS and PNIPAAM was formed to generate polymers with oxygen and glucose permeability as well as improved wettability compared to PDMS homopolymers and greater mechanical strength than PNIPAAM homopolymers. Transparent vinyl and hydroxyl terminated PDMS/PNIPAAM IPNs (PDMS-V and PDMS-OH IPNs, respectively) were successfully synthesized. Transmission electron microscopy images verified the structure of the IPNs. Surface analysis suggested that PNIPAAM was present on the surface as well as in the bulk material. PDMS-OH IPNs generated from a PDMS-OH matrix cured in the presence of solvent had the highest glucose permeability at  $10(-7)\text{cm}^2/\text{s}$ , comparable to that of the native cornea. The LCST phenomenon remained in these materials, although changes were not as abrupt as with pure PNIPAAM. These results suggest that these materials may be further developed as ophthalmic biomaterials or for controlled drug-release applications. .COPYRGT. 2004 Published by Elsevier Ltd.

CT Medical Descriptors:

permeability

wettability

synthesis

transmission electron microscopy

tensile strength

chemical structure

surface property

cornea

temperature

article

priority journal

Drug Descriptors:

\*glucose

\*dimeticone

\*poly(n isopropylacrylamide)

\*biomaterial

polymer

oxygen

vinyl derivative

hydroxyl group

solvent

RN (glucose) 50-99-7, 84778-64-3; (dimeticone) 32028-95-8, 68248-27-1, 9004-73-3, 9006-65-9; (poly(n isopropylacrylamide)) 25189-55-3; (oxygen) 7782-44-7; (vinyl derivative) 2669-89-8

L84 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 2  
 AN 2004:550594 HCAPLUS  
 DN 141:90219  
 ED Entered STN: 09 Jul 2004  
 TI N-isopropylacrylamide polymer-containing compositions for  
**inhibiting protein absorption on**  
**medical device surfaces**  
 IN Ketelson, Howard Allen  
 PA USA  
 SO U.S. Pat. Appl. Publ., 8 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM B32B027-08  
 INCL 428474400  
 CC 38-3 (Plastics Fabrication and Uses)  
 Section cross-reference(s): 63  
 FAN.CNT 1

*applicant*

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004131870	A1	20040708	US 2003-732934	20031211
	WO 2004060429	A1	20040722	WO 2003-US39250	20031211
	W: AU, BR, CA, CN, JP, KR, MX, NO, NZ, SG, US, ZA				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,				
	IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
PRAI	US 2002-436159P	P	20021223		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004131870	ICM	B32B027-08
	INCL	428474400
US 2004131870	NCL	428/474.400
	ECLA	A61L012/14B2; A61L012/14D2; C11D003/00B16; C11D003/37C8F

AB N-isopropylacrylamide (NIPAM) polymers is used to treat the surfaces of **medical devices**, such as contact lenses to prevent or reduce the **formation of protein deposits** on it. Thus, NIPAM polymer (P 2991) and a buffered vehicle containing sorbitol, boric acid, and NaCl were used to presoak contact lenses, which were then deposited with lysozyme solution, and the extracted lysozyme on the contact lenses were then determined by fluorescence spectrophotometer.

ST isopropylacrylamide polymer **protein absorption**  
**medical device contact lens**

IT Contact lenses  
**Medical goods**  
 (N-isopropylacrylamide polymer-containing compns. for **inhibiting protein absorption on medical device surfaces**)

IT 50-70-4, Sorbitol, uses 57-55-6, Propylene glycol, uses 139-33-3, Disodium edetate 994-36-5, Sodium citrate 7647-14-5, Sodium chloride, uses 10043-35-3, Boric acid, uses 13840-56-7, Sodium borate 106392-12-5, Pluronic F 127 717133-84-1, P 2426F2 717133-87-4, AL 8496  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (N-isopropylacrylamide polymer-containing compns. for **inhibiting protein absorption on medical device surfaces**)

IT 25189-55-3, N-Isopropylacrylamide homopolymer  
 RL: TEM (Technical or engineered material use); USES (Uses)

(P 1239, P 2991, P 604; N-isopropylacrylamide polymer-containing compns. for **inhibiting protein absorption** on medical device surfaces)

IT 110617-70-4, Tetronic 1304

RL: TEM (Technical or engineered material use); USES (Uses)  
(Tetronic 1107; N-isopropylacrylamide polymer-containing compns. for **inhibiting protein absorption** on medical device surfaces)

L84 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:824082 HCAPLUS

DN 141:337708

ED Entered STN: 08 Oct 2004

TI Multi-functional thermoresponsive polymeric materials and their uses as drug carriers

IN Lowe, Tao Lu; Kim, Young Shin; Huang, Xiao

PA Penn State Research Foundation, USA

SO PCT Int. Appl., 72 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C25D

CC 63-6 (Pharmaceuticals)

Section cross-reference(s): 35

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004085712	A2	20041007	WO 2004-US8810	20040324
	WO 2004085712	A3	20041209		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI	US 2003-457499P	P	20030324		
	US 2003-466966P	P	20030501		
	US 2003-519796P	P	20031114		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

WO 2004085712 ICM C25D

AB Multifunctional polymers are disclosed having a smart segment and a biodegradable segment. Advantageously, the biodegradable segment includes a hydrophilic segment and a hydrophobic segment. Embodiments include combining the multifunctional polymeric material with a biol. active substance in an aqueous loading environment and administering the composition as a

drug delivery vehicle to a human subject. For example, a copolymer hydrogel was prepared from N-isopropylacrylamide and diacrylate poly(L-lactic acid) and dextran allyl isocyanate and was loaded with nerve growth factor (NGF) for releasing NGF thermoresponsively.

ST multiple functional thermoresponsive polymer drug carrier; isopropylacrylamide PLLA diacrylate dextran allyl isocyanate copolymer hydrogel NGF

- IT Bone morphogenetic proteins  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(2; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(4-1BB; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Proteins  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(A; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Chemokines  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(BCA-1; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Cytokine receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(BCMA (B-cell maturation protein); multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Chemokines  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(BRAX; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Chemokine receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(CCR8; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Chemokine receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(CXCR5; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(IL-10R, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT G protein-coupled receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(MCH-1R (melanin concentrating hormone receptor 1); multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Proteins  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(SBP (sex steroid-binding protein); multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Proteins  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(TNF-BP (tumor necrosis factor-binding protein); multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 7 receptors  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 2 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 3 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for

- drug delivery)
- IT Interleukin 4 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 5 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 6 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 8 receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Growth factors, animal  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(bone-derived; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Neurotrophic factors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(brain-derived; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Elastins  
Polyanhydrides  
Polyphosphazenes  
Polyurethanes, biological studies  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(copolymers; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Megakaryocyte  
(derived growth factors; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Cytokines  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(differentiation-inducing factor; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Nervous system, disease  
(dyskinesia, drugs for; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Initiation factors (**protein formation**)  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(eIF-4G; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Growth factors, animal  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(endothelium-derived growth factors; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Growth factors, animal  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(epithelial cell growth factors; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Colony stimulating factor receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(erythropoiesis; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Neurotrophic factors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)

(glial-derived; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Drug delivery systems  
(hydrogels; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(interleukin 11, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(interleukin 12, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(interleukin 13, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(interleukin 15, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Interleukin receptors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(interleukin 9, antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Tumor necrosis factors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(ligands for inducing apoptosis; multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Analgesics  
Anti-inflammatory agents  
Antibiotics  
Anticoagulants  
Antimicrobial agents  
Antiparkinsonian agents  
Antitumor agents  
Antiviral agents  
Cytotoxic agents  
Dissolution  
Drugs  
Erythropoiesis  
Human  
Lactobacillus  
Micelles  
Microgels  
Microparticles  
Microspheres  
Nanoparticles  
Nutrients  
Permeability  
Polymer degradation  
Swelling, physical  
Vaccines  
(multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Dendritic polymers  
Polyesters, biological studies  
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)

IT Amino acids, biological studies

- Antibodies and Immunoglobulins
- DNA
- Enzymes, biological studies
- Gene
- Glucocorticoids
- Growth factors, animal
- Hormones, animal, biological studies
- Interferons
- Interferons
- Interleukin 1 receptor antagonist
- Interleukin 6
- Interleukins
- Lipopolysaccharides
- Neurotrophic factors
- Nucleic acids
- Parathyroid hormone receptors
- Platelet-derived growth factors
- Polyamines
- Proteins
- RNA
- Stem cell factor
- Steroids, biological studies
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Nanostructures
- Spheres  
(nanospheres; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Polyethers, biological studies
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(ortho ester group-containing, copolymers; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Polyesters, biological studies
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(phosphorus-containing, copolymers; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Polyamides, biological studies
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(poly(amino acids), copolymers; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Receptors
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(protein; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Antibacterial agents  
(quinolone; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interleukin 14
- Interleukin 16
- RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(receptor antagonists; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Albumins, biological studies
- RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(serum, bovine; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Biological transport  
(uptake; multi-functional polymeric and dendritic hydrogels for drug delivery)

- IT Alzheimer's disease  
(vaccines for; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interferons  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
( $\alpha$ ; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Amyloid  
Transforming growth factors  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
( $\beta$ -; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT Interferons  
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
( $\gamma$ ; multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 9061-61-4, Nerve growth factor  
RL: ADV (Adverse effect, including toxicity); BSU (Biological study, unclassified); PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 2387-23-7P  
RL: BYP (Byproduct); PREP (Preparation)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 61-73-4, Methylene blue  
RL: PRP (Properties)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 2210-25-5DP, reaction products with dextran-hydroxyethyl methacrylate lactate adduct 25189-55-3P, Poly(N-isopropyl acrylamide)  
700878-74-6P 701203-63-6P  
RL: PRP (Properties); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 107-11-9, Allylamine 121-44-8, Triethylamine, reactions 141-43-5, 2-Aminoethanol, reactions 530-62-1, N,N'-Carbonyl diimidazole 538-75-0, 1,3-Dicyclohexyl carbodiimide 814-68-6, Acryloyl chloride 868-77-9, 2-Hydroxyethyl methacrylate 1476-23-9, Allyl isocyanate 2592-95-2, N-Hydroxybenzotriazole 4511-42-6, L-Lactide 9004-54-0, Dextran, reactions 26161-42-2 26811-96-1, Poly(L-lactic acid) 769967-66-0  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 26161-42-2DP, reaction products with aminoethanol and acryloyl chloride, polymers with dextran acrylates 193158-88-2P 199454-03-0P 248242-96-8P 301334-90-7P 303052-00-8P 706817-54-1P 706817-56-3P 769967-65-9P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 303067-65-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
(multi-functional polymeric and dendritic hydrogels for drug delivery)
- IT 50-18-0, Cyclophosphamide 50-78-2, Aspirin 51-45-6, Histamine, biological studies 51-45-6D, Histamine, derivs. 51-85-4, Cystineamine 51-85-4D, Cystineamine, derivs. 52-86-8, Haloperidol 53-86-1, Indomethacin 55-98-1, Busulfan 57-22-7, Vincristine 57-96-5, Sulfinpyrazone 58-73-1, Diphenhydramine 58-73-1D, Diphenhydramine, derivs. 59-05-2, Methotrexate 60-00-4, Edetic acid, biological studies



60-54-8, Tetracycline 61-68-7, Mefenamic acid 61-72-3, Cloxacillin 68-89-3, Dipyrone 69-53-4, Ampicillin 81-81-2, Warfarin 103-90-2, Paracetamol 114-07-8, Erythromycin 129-00-0, Pyrene, biological studies 147-94-4, Cytarabine 446-86-6, Azathioprine 552-94-3, Salsalate 645-05-6, Altretamine 1397-89-3, Amphotericin B 1406-05-9, Penicillin 8064-90-2 9001-01-8, Kallikrein 9002-01-1, Streptokinase 9002-62-4, Lactogenic hormone, biological studies 9002-67-9, Luteotropic hormone 9002-68-0, Follicle stimulating hormone 9002-71-5, Thyroid stimulating hormone 9002-72-6, Growth hormone 9003-05-8D, Polyacrylamide, N-alkyl derivs., copolymer 9004-10-8, Insulin, biological studies 9005-49-6, Heparin, biological studies 9013-20-1, Streptavidin 9014-42-0, Thrombopoietin 9031-11-2,  $\beta$ -Galactosidase 9039-53-6, Urokinase 11096-26-7, Erythropoietin 11111-12-9, Cephalosporin 15307-86-5, Diclofenac 15663-27-1, Cisplatin 15802-18-3D, Cyanoacrylic acid, alkyl derivs., copolymer 19387-91-8, Tinidazole 22071-15-4, Ketoprofen 22149-38-8, Artemin 22494-42-4, Diflunisal 23214-92-8, Doxorubicin 24980-41-4D, Poly( $\epsilon$ -caprolactone), copolymers 25189-55-3D, Poly(N-isopropylacrylamide, copolymers 25248-42-4D, Poly[oxy(1-oxo-1,6-hexanediyl)], copolymers 26023-30-3D, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)], copolymers 26100-51-6D, Polylactic acid, copolymers 26161-42-2D, copolymers 26680-10-4D, Polylactide, copolymers 26780-50-7D, Glycolide-lactide copolymer, copolymers 26787-78-0, Amoxycillin 26811-96-1D, Poly(L-lactic acid), copolymers 31431-39-7, Mebendazole 33069-62-4, Taxol 33419-42-0, Etoposide 36322-90-4, Piroxicam 41575-94-4, Carboplatin 55142-85-3, Ticlopidine 56420-45-2, Epirubicin 62031-54-3, Fibroblast growth factor 63527-52-6, Cefotaxime 70458-96-7, Norfloxacin 71486-22-1, Vinorelbine 80214-83-1, Roxithromycin 81103-11-9, Clarithromycin 83869-56-1, Granulocyte macrophage colony stimulating factor 83905-01-5, Azithromycin 85721-33-1, Ciprofloxacin 87239-81-4, Cefpodoxime proxetil 88040-23-7, Cefepime 89339-61-7D, Poly(N-propylacrylamide, copolymers 90357-06-5, Bicalutamide 100986-85-4, Levofloxacin 107868-30-4, Exemestane 112143-11-0D, biotinylated, copolymers 112811-59-3, Gatifloxacin 120511-73-1, Anastrozole 122195-49-7D, copolymers 122304-04-5, Milk growth factor 127464-60-2, Vascular endothelial growth factor 130939-66-1, Neurotrophic factor 3 139639-23-9, Tissue plasminogen activator 143011-72-7, Granulocyte-colony stimulating factor 148348-15-6, Keratinocyte growth factors 154361-50-9, Capecitabine 169494-85-3, Leptin 180132-69-8, Cardiotrophin 1 205944-50-9, Osteoprotegerin 309758-71-2, Artemin 372092-80-3, Protein kinase 691397-13-4D, Ethylene oxide-propylene oxide triblock copolymer, copolymers  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (multi-functional polymeric and dendritic hydrogels for drug delivery)

L84 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 3  
 AN 2004:523138 HCAPLUS  
 DN 141:187276  
 ED Entered STN: 30 Jun 2004  
 TI Reversible meso-scale smart polymer-protein particles of controlled sizes  
 AU Kulkarni, Samarth; Schilli, Christine; Mueller, Axel H. E.; Hoffman, Allan S.; Stayton, Patrick S.  
 CS Department of Bioengineering, University of Washington, Seattle, WA, 98195, USA  
 SO Bioconjugate Chemistry (2004), 15(4), 747-753  
 CODEN: BCCHES; ISSN: 1043-1802  
 PB American Chemical Society  
 DT Journal  
 LA English

CC 9-16 (Biochemical Methods)

Section cross-reference(s): 63

AB Functionalized beads and particles in the size range of tens to hundreds of nanometers (nano- to meso-scale) are finding increased applications in the bioanal. field. We show here that conjugates of streptavidin and the temperature-responsive polymer poly(N-isopropylacrylamide) (PNIPAAm), synthesized with low polydispersities by reversible addition-fragmentation chain transfer (RAFT) polymerization, rapidly formed mesoscale polymer-protein particles above the lower critical solution temperature (LCST). The average hydrodynamic diams. of these particles could be controlled between 250 nm to 900 nm by the choice of conjugate concentration and polymer mol. weight, and/or through control of the rate of temperature change. Once formed, the biohybrid particles were found to be stable for >16 h at the controlled size, unlike the free PNIPAAm which continued to aggregate and grow over time into very large and polydisperse aggregates. The reversibility between the smart polymer-protein particles and the free polymer-protein conjugates opens potential uses in traditional diagnostic formats and in microfluidic formats where the differential diffusive and phys. properties might be exploited for seps., analyte concentration, and signal generation.

ST meso scale smart polymer protein particle controlled size

IT Diagnosis

(agents; reversible meso-scale smart polymer-protein particles of controlled sizes)

IT Proteins

RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process)

(conjugates; reversible meso-scale smart polymer-protein particles of controlled sizes)

IT Critical solution temperature

(lower; reversible meso-scale smart polymer-protein particles of controlled sizes)

IT Drug delivery systems

(nanoparticles, controlled-release; reversible meso-scale smart polymer-protein particles of controlled sizes)

IT Mathematical methods

Polydispersity

(reversible meso-scale smart polymer-protein particles of controlled sizes)

IT 25189-55-3D, Poly(N-isopropylacrylamide), conjugates with streptavidin

RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); ANST (Analytical study); PROC (Process)

(reversible meso-scale smart polymer-protein particles of controlled sizes)

IT 9013-20-1D, Streptavidin, conjugates with PNIPAAm polymer

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(reversible meso-scale smart polymer-protein particles of controlled sizes)

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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AN 2004150396 EMBASE

TI Local drug delivery in restenosis injury: Thermoresponsive co-polymers as potential drug delivery systems.

AU Kavanagh C.A.; Rochev Y.A.; Gallagher W.M.; Dawson K.A.; Keenan A.K.

CS A.K. Keenan, Department of Pharmacology, Conway Inst. Biomol. Biomed. Res., University College Dublin, Belfield, Dublin 4, Ireland.  
Alan.Keenan@ucd.ie

SO Pharmacology and Therapeutics, (2004) Vol. 102, No. 1, pp. 1-15.  
Refs: 143

ISSN: 0163-7258 CODEN: PHTHDT

PUI S 0163-7258(04)00009-9

CY United States

DT Journal; General Review

FS 018 Cardiovascular Diseases and Cardiovascular Surgery  
027 Biophysics, Bioengineering and Medical Instrumentation  
030 Pharmacology  
037 Drug Literature Index  
039 Pharmacy

LA English

SL English

ED Entered STN: 20040422

Last Updated on STN: 20040422

AB The success of percutaneous transluminal coronary angioplasty in treatment of acute coronary syndromes has been compromised by the incidence of restenosis. The physical insult of balloon insertion can damage or remove the endothelial monolayer, thereby generating a prothrombotic surface. The resulting inappropriate response to injury can also lead to penetration of inflammatory cells, conversion of the underlying media to a synthetic phenotype, deposition of extracellular matrix, constrictive remodeling, and neointimal hyperplasia. While **stent** implantation at the time of balloon insertion has offset some of these events, inflammatory responses to the implanted biomaterial (**stent**) and intimal hyperplasia are still prominent features of the procedure, leading in 20-30% of cases to in-**stent** restenosis within a year. Systemic delivery of drugs designed to offset in-**stent** restenosis injury has been largely unsuccessful, which has led to the

development of strategies for coating **stents** with drugs for local delivery. Drug-eluting **stents** constitute an innovative means of further reducing the incidence of restenosis injury and clinical trials have shown encouraging results. This review focuses on properties of a class of environment-sensitive hydrogels, the N-isopropylacrylamide-based thermoresponsive co-polymers, on their potential roles as **stent coatings**, on their demonstrated ability to incorporate and release drugs that modify vascular endothelial and smooth muscle cell functions, and on issues that still await clarification, prior to their adoption in a clinical setting. .COPYRG. 2004 Elsevier Inc. All rights reserved.

CT Medical Descriptors:

\*restenosis: CO, complication  
**\*drug eluting stent**  
 hydrogel  
 drug delivery system  
 vascular endothelium  
 smooth muscle fiber  
 artery injury  
 transluminal coronary angioplasty  
 thrombocyte aggregation  
 thrombogenesis  
 anticoagulant therapy  
 artery intima proliferation: CO, complication  
 species comparison  
 carotid artery injury  
 controlled drug release  
 radioisotope therapy  
**protein cross linking**  
 human  
 review  
 priority journal

Drug Descriptors:

\*poly(n isopropylacrylamide)  
 acetylsalicylic acid: PD, pharmacology  
 ticlopidine: PD, pharmacology  
 clopidogrel: PD, pharmacology  
 abciximab: PR, pharmaceuticals  
 abciximab: PD, pharmacology  
 vapiprost: PD, pharmacology  
 eptifibatide: PD, pharmacology  
 tirofiban: PD, pharmacology  
 heparin: PR, pharmaceuticals  
 heparin: PD, pharmacology  
 heparin: IV, intravenous drug administration  
 paclitaxel: PR, pharmaceuticals  
 paclitaxel: PD, pharmacology  
 rapamycin: PR, pharmaceuticals  
 rapamycin: PD, pharmacology

RN (poly(n isopropylacrylamide)) 25189-55-3; (acetylsalicylic acid) 493-53-8, 50-78-2, 53663-74-4, 53664-49-6, 63781-77-1; (ticlopidine) 53885-35-1, 55142-85-3; (clopidogrel) 113665-84-2, 120202-66-6, 90055-48-4, 94188-84-8; (abciximab) 143653-53-6; (vapiprost) 85505-64-2; (eptifibatide) 148031-34-9; (tirofiban) 142373-60-2, 144494-65-5, 150915-40-5; (heparin) 37187-54-5, 8057-48-5, 8065-01-8, 9005-48-5; (paclitaxel) 33069-62-4; (rapamycin) 53123-88-9

CN Aspirin; Gr 32191b

L84 ANSWER 6 OF 20 MEDLINE on STN  
 AN 2003529297 MEDLINE

DUPLICATE 4

DN PubMed ID: 14606910  
TI Complex formation of protein with different water-soluble synthetic polymers.  
AU Matsudo Toshiyuki; Ogawa Kazuyoshi; Kokufuta Etsuo  
CS Institute of Applied Biochemistry, University of Tsukuba, Tsukuba, Ibaraki 305-8572, Japan.  
SO Biomacromolecules, (2003 Nov-Dec) 4 (6) 1794-9.  
Journal code: 100892849. ISSN: 1525-7797.  
CY United States  
DT Journal; Article; (JOURNAL ARTICLE)  
LA English  
FS Priority Journals  
EM 200407  
ED Entered STN: 20031111  
Last Updated on STN: 20040728  
Entered Medline: 20040726  
AB The formation of protein-polymer complexes was studied in an aqueous system using dynamic light scattering (DLS) and static light scattering (SLS) as the main experimental tools. Human serum albumin (HSA) was used as a protein and complexed with four representative water-soluble polymers: poly(N-isopropylacrylamide) (PNIPA), poly(ethylene glycol) (PEG), poly(vinyl pyrrolidone) (PVP), and poly(vinyl alcohol) (PVA). The first three molecular weights were within 420,000-540,000 and the last one was 270,000. The complexation was performed at 25 degrees C in 0.01 M NaCl solution adjusted to pH 3 with HCl as a function of mixing ratio (rm; molar ratio of polymer to HSA). From SLS experiments, we determined the molecular weight of the resulting complexes, from the value of which the number (nb) of bound proteins per polymer was estimated. It was found that each polymer forms an intrapolymer complex over a wide range of rm ( $1.2 > \text{or} = \text{rm} > \text{or} = 0.01$ ). Then, a marked decrease in nb with increasing rm was found. Over the whole rm range, the HSA-PNIPA complex exhibited a large nb value, as compared with the other three complexes whose nb values at the same rm were close to one another. Both the hydrodynamic radius (Rh) by DLS and the radius of gyration (Rg) by SLS for the complexes of PNIPA, PVP, and PVA decreased and then reached a constant value as nb decreased with increasing rm. In the PEG system, however, there were a few changes in Rh and Rg with nb. The Rg/Rh ratio, as an indication of chain expansion, was found to increase with decreasing nb in the PNIPA system. The complexes of PVA and PVP displayed a similar tendency, although the magnitude of the increasing trend was smaller than that of the PNIPA complex. In contrast, the Rg/Rh ratio of the PEG complex hardly varied depending on nb. These results were discussed in connection with the differences of physicochemical properties among four water-soluble polymers.  
CT Acrylic Resins: CH, chemistry  
Dialysis  
Humans  
Light  
Polyethylene Glycols: CH, chemistry  
\*Polymers: CH, chemistry  
Polyvinyl Alcohol: CH, chemistry  
Povidone: CH, chemistry  
\*Proteins: CH, chemistry  
Research Support, Non-U.S. Gov't  
Scattering, Radiation  
Serum Albumin: CH, chemistry  
Solubility  
Water  
RN 25189-55-3 (poly-N-isopropylacrylamide); 7732-18-5 (Water);  
9002-89-5 (Polyvinyl Alcohol); 9003-39-8 (Povidone)

CN 0 (Acrylic Resins); 0 (Polyethylene Glycols); 0 (Polymers); 0 (Proteins);  
0 (Serum Albumin)

L84 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:592946 HCAPLUS

DN 140:231781

ED Entered STN: 04 Aug 2003

TI In-Lens cryo-high resolution scanning electron microscopy:  
methodologies for molecular imaging of self-assembled organic hydrogels

AU Apkarian, Robert P.; Wright, Elizabeth R.; Seredyuk, Victor A.; Eustis,  
Susan; Lyon, L. Andrew; Conticello, Vincent P.; Menger, Fredric M.

CS Integrated Microscopy and Microanalytical Facility, Emory University,  
Atlanta, GA, 30322, USA

SO Microscopy and Microanalysis (2003), 9(4), 286-295

CODEN: MIMIF7; ISSN: 1431-9276

PB Cambridge University Press

DT Journal

LA English

CC 9-5 (Biochemical Methods)

AB The micro- and nanoarchitectures of water-swollen hydrogels were routinely  
analyzed in three dimensions at very high resolution by two cryopreparation  
methods that provide stable low-temperature specimens for in-lens high  
magnification recordings. Gemini surfactants (gS), poly-N-  
isopropylacrylamides (p-NIP Am), and elastin-mimetic di- (db-E) and  
triblock (tb-E) copolymer **proteins** that **form** hydrogels  
have been routinely analyzed to the sub-10-nm level in a single day.  
After they were quench or high pressure frozen, samples in bulk planchets  
were subsequently chromium coated and observed at low temperature in an in-  
**lens** field emission SEM. Pre-equilibrated planchets  
(4-40°C) that hold 5-10 µl of hydrogel facilitate dynamic  
morphol. studies above and below their transition temps. Rapidly frozen  
samples were fractured under liquid nitrogen, low-temperature metal coated, and  
observed in-lens to assess the dispersion characteristics of  
micelles and fragile colloidal assemblies within bulk frozen water.  
Utilizing the same planchet freezing system, the cryoetch-HRSEM technique  
removed bulk frozen water from the hydrogel matrix by low-temperature,  
high-vacuum sublimation. The remaining frozen solid-state sample  
faithfully represented the hydrogel matrix. Cryo- and cryoetch-HRSEM  
provided vast vistas of hydrogels at low and intermediate magnifications  
whereas high magnification recordings and anaglyphs (stereo images)  
provided a three-dimensional prospective and measurements on a mol. level.

ST cryoetch high resolu SEM hydrogel morphol mol imaging

IT Surfactants

(Gemini A; in-Lens cryo-high resolution SEM: methodologies for  
mol. imaging of self-assembled organic hydrogels)

IT Etching

(cryo-; in-Lens cryo-high resolution SEM: methodologies for mol.  
imaging of self-assembled organic hydrogels)

IT Scanning electron microscopy

(cryoetch, high resolution; in-Lens cryo-high resolution SEM:  
methodologies for mol. imaging of self-assembled organic hydrogels)

IT Dispersion (of materials)

Hydrogels

Microstructure

Self-assembly

(in-Lens cryo-high resolution SEM: methodologies for mol.  
imaging of self-assembled organic hydrogels)

IT Imaging

(mol.; in-Lens cryo-high resolution SEM: methodologies for mol.  
imaging of self-assembled organic hydrogels)

IT **Proteins**

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(triblock, elastin-mimetic; in-Lens cryo-high resolution SEM: methodologies for mol. imaging of self-assembled organic hydrogels)

IT 7732-18-5, Water, processes

RL: REM (Removal or disposal); PROC (Process)

(bulk frozen; in-Lens cryo-high resolution SEM: methodologies for mol. imaging of self-assembled organic hydrogels)

IT 25189-55-3, Poly(N-isopropylacrylamide) 667915-32-4, Gemini A

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(in-Lens cryo-high resolution SEM: methodologies for mol. imaging of self-assembled organic hydrogels)

IT 7440-47-3, Chromium, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)

(in-Lens cryo-high resolution SEM: methodologies for mol. imaging of self-assembled organic hydrogels)

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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- (10) Menger, F; Langmuir 2000, V16, P9113 HCAPLUS
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- (12) Walther, P; Scanning 1990, V12, P300
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- (14) Wright, E; 59th Ann Proc Microsc Soc America 2001, P136
- (15) Wright, E; Adv Funct Mater 2002, V12, P149 HCAPLUS
- (16) Wright, E; Microsc Microanal 2003, V9, P171 HCAPLUS

L84 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:210806 HCAPLUS

DN 139:296814

ED Entered STN: 18 Mar 2003

TI Temperature-responsive polymeric surface modifications by plasma polymerization: cell and **protein** interactions

AU Ratner, Buddy D.; Cheng, Xuanhong; Wang, Yanbing; Hanein, Yael; Bohringer, Karl F.

CS Department of Bioengineering, University of Washington Engineered Biomaterials, Seattle, WA, 98195, USA

SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2003), 44(1), 198-199

CODEN: ACPPAY; ISSN: 0032-3934

PB American Chemical Society, Division of Polymer Chemistry

DT Journal; (computer optical disk)

LA English

CC 63-7 (Pharmaceuticals)

AB The **surface** characteristics, **protein** adsorption properties and cell interactions of plasma polymerized N-isopropylacrylamide were investigated. The **protein** adsorption of ppNIPAM above its low critical solution temperature (LCST) was found to be irreversible.

Results also

show that the cells adhere and grow on ppNIPAM at 37° and detach from the surface at room temperature. The ppNIPAM surfaces are non-toxic and excellent for cell growth. A microheater array can spatially control cell attachment to a ppNIPAM-treated chip, suggesting many possibilities for cell chips and proteomic chips.

ST acrylamide **protein** adsorption

IT Antibodies and Immunoglobulins

RL: BSU (Biological study, unclassified); BIOL (Biological study) (IgG; temperature-responsive polymeric surface modifications by plasma polymerization)

IT Critical solution temperature

(lower; temperature-responsive polymeric surface modifications by plasma polymerization)

IT Polymerization

(plasma; temperature-responsive polymeric surface modifications by plasma polymerization)

IT Adsorption

(**protein**; temperature-responsive polymeric **surface** modifications by plasma polymerization)

IT Albumins, biological studies

RL: BSU (Biological study, unclassified); BIOL (Biological study) (serum; temperature-responsive polymeric surface modifications by plasma polymerization)

IT **Prosthetic materials and Prosthetics**

(temperature-responsive polymeric surface modifications by plasma polymerization)

IT Fibrinogens

RL: BSU (Biological study, unclassified); BIOL (Biological study) (temperature-responsive polymeric surface modifications by plasma polymerization)

IT Polyesters, biological studies

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses) (temperature-responsive polymeric surface modifications by plasma polymerization)

IT 25189-55-3, Poly(N-Isopropylacrylamide)

RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses) (temperature-responsive polymeric surface modifications by plasma polymerization)

IT 7631-86-9, Silica, biological studies 25038-59-9, PET, biological studies

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses) (temperature-responsive polymeric surface modifications by plasma polymerization)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Lin, S; Polymer 1999, V40, P2619 HCAPLUS

(2) Pan, Y; Biomacromolecules 2000, V2, P32

(3) Priest, J; ACS symposium Serie 1987, V350, P255 HCAPLUS

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L84 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:79966 HCAPLUS

DN 141:42834

ED Entered STN: 01 Feb 2004

TI Multi-functional hydrogel systems for sustained and targeted release of nerve growth factor

AU Huang, Xiao; Nayak, Bishwa R.; Lowe, Tao L.

CS Department of Surgery, Pennsylvania State University, Hershey, PA, 17033,



USA

SO AIChE Annual Meeting, Conference Proceedings, San Francisco, CA, United States, Nov. 16-21, 2003 (2003), 155-158 Publisher: American Institute of Chemical Engineers, New York, N. Y.  
CODEN: 69EZVH; ISBN: 0-8169-0941-5

DT Conference; (computer optical disk)

LA English

CC 63-7 (Pharmaceuticals)

AB A series of multi-functional hydrogel systems have been designed and synthesized for potential brain implantation to realize local and sustained release of nerve growth factor for the treatment of Alzheimer's disease. The systems are three-dimensional crosslinked copolymers composed of a thermo-responsive unit, a hydrolytically degradable and hydrophobic unit, and an enzymically degradable and hydrophilic unit, combining the merits of thermo-responsive and biodegradable polymeric drug delivery systems, and allowing a low-temperature aqueous NGF loading to **prevent protein** denaturation. The hydrogels show a lower critical solution temperature (LCST) at approx. 32°, and demonstrate different swelling and release profiles at temps. above or under the LCST. Cytotoxicity study suggested that the hydrogels were not toxic to PC-12 cells.

ST polyisopropylacrylamide polylactate dextran hydrogel implant sustained release Alzheimer disease

IT Drug delivery systems  
(hydrogels, sustained-release; multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT **Prosthetic materials and Prosthetics**  
(implants; multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT Polyesters, biological studies  
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(lactic acid-based; multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT Critical solution temperature  
(lower; multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT Brain  
Cytotoxicity  
Dissolution  
Swelling, physical  
(multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT Growth factors, animal  
RL: BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT 701203-63-6  
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(hydrogel; multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

IT 25189-55-3, Poly(N-isopropylacrylamide) 700878-74-6  
RL: PRP (Properties); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(multi-functional hydrogel systems for sustained and targeted release of nerve growth factor)

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Brazel, C; Macromolecules 1995, V28, P8016 HCAPLUS
- (2) Bromberg, L; Advanced Drug Delivery Reviews 1998, V31, P197 HCAPLUS
- (3) Cao, X; Biomaterials 1999, V20, P329 HCAPLUS
- (4) Crotts, G; Journal of Microencapsulation 1998, V15, P699 HCAPLUS
- (5) Hoffman, A; Bioartificial Organs Iii: Tissue Sourcing, Immunoisolation, and Clinical Trials 2001, V944, P62 HCAPLUS
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- (10) Lowe, T; Langmuir 1999, V15, P4259 HCAPLUS
- (11) Lowe, T; Macromolecules 1998, V31, P1590 HCAPLUS
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- (13) Park, T; Journal of Controlled Release 1995, V33, P211 HCAPLUS
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L84 ANSWER 10 OF 20 RAPRA COPYRIGHT 2005 RAPRA on STN

AN R:838527 RAPRA FS Rapra Abstracts

TI HYDROPHILIC STIMULI-RESPONSIVE PARTICLES FOR BIOMEDICAL APPLICATIONS.

AU Pichot C; Elaissari A; Duracher D; Meunier F; Sauzedde F (Ecole Normale Supérieure de Lyon)

SO Macromolecular Symposia VOL.175, Aug.2001, p.285-97  
ISSN: 1022-1360

PY 2001

DT Journal

LA English

AB Hydrophilic and stimuli-responsive submicro latex particles based on polyalkyl(meth)acrylamide were prepared by radical initiated polymerisation in heterogeneous media with the aid of a water soluble initiator and methylenebisacrylamide as crosslinker. The synthesis and properties of functionalised polystyrene-poly-N-isopropylacrylamide core-shell particles or poly-N-isopropylmethacrylamide (NIPAM) microgel particles are reviewed. Particle size analysis showed that highly monodispersed latexes could be synthesised when the nucleation period was short. The dramatic change in the colloidal properties observed, i.e. particle size and electrophoretic mobility, reflected the high thermal sensitivity of the particles. The hydrophilic nature of the particles below the volume phase transition temperature resulted in a drastic decrease in the physical adsorption of proteins. Some possible biomedical applications of the particles are considered briefly, e.g. the adsorption of RNA onto cationic poly(NIPAM) latexes as a function of pH, temperature, ionic strength, and adsorption time. 20 refs.

CC 6121; 42C3.10; 42C21; 6123; 94; 941; 9912

SC \*QQ; OB; KR; UJ; UB

CT ADSORPTION; AMINOETHYL METHACRYLATE COPOLYMER; APPLICATION; BATCH POLYMERISATION; BATCH POLYMERIZATION; BIOMEDICAL APPLICATION; COLLOIDAL PROPERTIES; DATA; ELECTRON MICROSCOPY; ELECTRON SCANNING MICROSCOPY; ELECTROPHORESIS; ELECTROPHORETIC MOBILITY; EMULSION POLYMERISATION; EMULSION POLYMERIZATION; GEL; GELS; GRAPH; HYDROGEL; INSTITUTION; ISOPROPYL ACRYLAMIDE COPOLYMER; LATEX; LATICES; MEDICAL

APPLICATION; METHYLENE BISACRYLAMIDE COPOLYMER; MICROGEL;  
 MICROSCOPY; MONODISPERSE; NUCLEATION; PARTICLE SIZE; PLASTIC;  
 POLYISOPROPYL ACRYLAMIDE; POLYMERISATION; POLYMERIZATION; PROPERTIES;  
 PROTEIN; SCANNING ELECTRON MICROGRAPH; SCANNING ELECTRON  
 MICROSCOPE; SCANNING ELECTRON MICROSCOPY; SEM; STYRENE COPOLYMER;  
 SYNTHESIS; TECHNICAL; TEM; THERMOPLASTIC; TRANSMISSION ELECTRON  
 MICROSCOPY

NPT POTASSIUM PERSULFATE; POTASSIUM PERSULPHATE; RIBONUCLEIC ACID; RNA;  
 STYRENE

SHR BIOMEDICAL APPLICATIONS, latex, acrylamide polymers, particle size,  
 electrochemical properties, colloidal properties, microscopy, thermal  
 properties; LATEX, biomedical applications, acrylamide polymers, particle  
 size, electrochemical properties, colloidal properties, microscopy,  
 thermal properties; ACRYLAMIDE POLYMERS, biomedical applications, latex,  
 particle size, electrochemical properties, colloidal properties,  
 microscopy, thermal properties; PARTICLE SIZE, biomedical applications,  
 latex, acrylamide polymers, electrochemical properties, colloidal  
 properties, microscopy, thermal properties; ELECTROCHEMICAL PROPERTIES,  
 biomedical applications, latex, acrylamide polymers, particle size,  
 colloidal properties, microscopy, thermal properties; COLLOIDAL  
 PROPERTIES, biomedical applications, latex, acrylamide polymers, particle  
 size, electrochemical properties, microscopy, thermal properties;  
 MICROSCOPY, biomedical applications, latex, acrylamide polymers, particle  
 size, electrochemical properties, colloidal properties, thermal  
 properties; THERMAL PROPERTIES, biomedical applications, latex,  
 acrylamide polymers, particle size, electrochemical properties, colloidal  
 properties, microscopy

GT EUROPEAN COMMUNITY; EUROPEAN UNION; FRANCE; WESTERN EUROPE

L84 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:814388 HCAPLUS  
 DN 133:364147  
 ED Entered STN: 21 Nov 2000  
 TI Affinity-controlling adsorbent containing stimulus-responsive polymer for  
 separations and purifications  
 IN Yoshizako, Kimihiro; Akiyama, Yoshikatsu; Okano, Teruo; Ueno, Katsuhiko  
 PA Japan Chemical Innovation Institute, Japan; Japan as Represented by  
 Director General of Agency of Industrial Science and Technology  
 SO PCT Int. Appl., 34 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM B01J020-32  
 ICS B01D015-08  
 CC 48-1 (Unit Operations and Processes)  
 Section cross-reference(s): 9, 35, 63, 80

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000067901	A1	20001116	WO 2000-JP3022	20000511
	W: AU, CA, JP, US				
	RW: DE, FR, GB, IT, SE				
	EP 1194228	A1	20020410	EP 2000-927741	20000511
	R: DE, FR, GB, IT, SE				
	JP 2003524680	T2	20030819	JP 2000-616920	20000511
PRAI	JP 1999-130267	A	19990511		
	WO 2000-JP3022	W	20000511		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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WO 2000067901 ICM B01J020-32  
ICS B01D015-08

AB Affinity-controlling adsorbents comprising stimulus-responsive polymers and affinity ligands, independently attached (e.g., covalently) to a support matrix, are useful for the separation and purification of target substances

having physiol. activity. The adsorbent can be used for the purification of a target substance under a phys. stimulus while keeping  $\geq 1$  condition other than temperature constant (e.g., pH, organic solvent concentration or salt concentration).

The adsorbed substances can be eluted using a temperature-dependent process. The support matrix is capable of preventing nonspecific adsorption of proteins and achieving an excellent separation performance.

ST affinity chromatog stimulus responsive polymer; biomol purifn affinity chromatog intelligent polymer; drug purifn affinity chromatog intelligent polymer

IT Affinity chromatographic stationary phases

Affinity chromatography

Biochemical molecules

Drugs

Dyes

(affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

IT Acrylic polymers, uses

Ligands

Polymers, uses

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

IT Metals, processes

Proteins, general, processes

RL: PEP (Physical, engineering or chemical process); PUR (Purification or recovery); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); PROC (Process); USES (Uses)

(affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

IT 4419-11-8, 2,2'-Azobis(2,4-dimethylvaleronitrile) 57101-68-5, Pentanoic acid, 2,2'-azobis(4-cyano-

RL: CAT (Catalyst use); USES (Uses)

(affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

IT 12236-82-7D, reaction products with epoxides and acrylic polymer matrixes 25189-55-3D, N-Isopropylacrylamide, homopolymer,

carboxy-terminated, hydroxysuccinimide esters, reaction products with aminated acrylic polymers and epoxides and Cibacron Blue F3G-A

31743-77-8D, Ethylene dimethacrylate-glycidyl methacrylate copolymer, aminated, reaction products with hydroxysuccinimide esters of

polyisopropylacrylamide and epoxides and Cibacron Blue F3G-A

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

IT 930-22-3, 1,3-Butadiene monoepoxide 2224-15-9, Ethylene glycol diglycidyl ether

RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)

(spacers; affinity adsorbents containing stimulus responsive polymer for affinity chromatog. separation and purification)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD  
RE

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- (3) Galaev, I; JOURNAL OF CHROMATOGRAPHY A 1994, V684(1), P37 HCAPLUS
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- (5) Terumo Corp; JP 07135957 A 1995
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- (9) W R Grace & Co; EP 0534016 A 1993 HCAPLUS

L84 ANSWER 12 OF 20 RAPRA COPYRIGHT 2005 RAPRA on STN  
AN R:747453 RAPRA FS Rapra Abstracts  
TI METAL-COPOLYMER COMPLEXES OF N-ISOPROPYLACRYLAMIDE FOR AFFINITY  
PRECIPITATION OF PROTEINS.  
AU Galaev I Y; Kumar A; Mattiasson B (Lund,University)  
SO Journal of Macromolecular Science A 36, No.7/8, 1999, p.1093-105  
ISSN: 0022-233X  
PY 1999  
DT Journal  
LA English  
AB Copolymers of N-isopropylacrylamide(NIPAM) with styrene  
derivative of iminodiacetic acid and 1-vinylimidazole(VI) were  
synthesised by radical copolymerisation and metal complexation  
characteristics of the copolymers were investigated. The  
thermoprecipitation property of the copolymers indicated the application  
of Cu(II)-loaded copolymer of poly(VI/NIPAM) as a potential  
carrier for the metal chelate affinity precipitation of proteins. The  
studies carried out on the purification of **protein**  
**inhibitors** from different cereals suggested the specific  
interaction of metal ions bound on the copolymer and the histidine  
residues on the surface of the target protein. The recovered copolymers  
could be reloaded with metal ions and could be reused a number of times  
with high efficiency. 23 refs. (PMSE Symposium on Biomedical Applications  
of Water-Soluble Polymers and Hydrogels, Boston, USA, Aug.1998)  
CC 42C3.10.1A; 6M2  
SC \*QM; KN  
CT ACRYLAMIDE COPOLYMER; AFFINITY PRECIPITATION; APPLICATION; COMPLEX; DATA;  
FREE-RADICAL POLYMERISATION; GRAPH; IMINODIACETIC ACID COPOLYMER;  
INSTITUTION; INTERACTION; ISOPROPYL ACRYLAMIDE COPOLYMER; PLASTIC;  
POLYCHELATE; POLYMERIC COMPLEX; POLYMERISATION; POLYMERIZATION;  
PRECIPITATION; PROTEIN; PURIFICATION; RADICAL POLYMERISATION; RADICAL  
POLYMERIZATION; REUSABLE; TABLES; TECHNICAL; THERMOPLASTIC; VINYL  
IMIDAZOLE COPOLYMER  
NPT COPPER; HISTIDINE; METAL; METAL ION  
SHR POLYCHELATES, acrylamide copolymers; ACRYLAMIDE COPOLYMERS, polychelates  
GT SCANDINAVIA; SWEDEN; WESTERN EUROPE

L84 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 1999:584449 HCAPLUS  
DN 131:327387  
ED Entered STN: 17 Sep 1999  
TI Modification of liposomes with N-substituted polyacrylamides:  
identification of proteins adsorbed from plasma  
AU Yamazaki, A.; Winnik, F. M.; Cornelius, R. M.; Brash, J. L.  
CS Department of Chemical Engineering, McMaster University, Hamilton, ON,  
Can.  
SO Biochimica et Biophysica Acta (1999), 1421(1), 103-115  
CODEN: BBACAQ; ISSN: 0006-3002

PB Elsevier Science B.V.

DT Journal

LA English

CC 63-3 (Pharmaceuticals)

Section cross-reference(s): 6

AB Liposomes prepared from DMPC (80%) and cholesterol (20%) were modified with a series of hydrophobically modified N-substituted polyacrylamides, namely, poly[N-isopropylacrylamide] (PNIPAM), poly[N,N-bis(2-methoxyethyl)acrylamide] (PMEAM), and poly[(3-methoxypropyl)acrylamide] (PMPAM). The hydrophobic group, N-[4-(1-pyrenylbutyl)-N-n-octadecylamine] was attached to one end of the polymer chains to serve as an anchor for incorporation into the liposome bilayer. Liposome-polymer interactions were confirmed using fluorescence spectroscopy and chemical anal. Microscopy revealed differences in aggregation tendency between unmodified and polymer-modified liposomes. Proteins adsorbed to liposome surfaces during exposure to human plasma were identified by immunoblot anal. It was found that both unmodified and polymer-modified liposomes adsorb a wide variety of plasma proteins. Contact phase coagulation proteins, complement proteins, cell-adhesive **proteins**, serine protease **inhibitors**, plasminogen, antithrombin III, prothrombin, transferrin,  $\alpha$ 2-microglobulin, Hb, haptoglobin and  $\beta$ -lipoprotein as well as the major plasma proteins were all detected. Some differences were found between the unmodified and polymer-modified liposomes. The unmodified liposomes adsorbed plasminogen mainly as the intact protein, whereas on the modified liposomes plasminogen was present in degraded form. Also, the liposomes modified with PNIPAM in its extended conformation (below the lower critical solution temperature) appeared

to adsorb less protein than those containing the 'collapsed' form of PNIPAM (above the LCST).

ST liposome polyacrylamide deriv plasma protein adsorption; blood plasma protein liposome polyacrylamide

IT Blood plasma

Molecular association

(adsorption of plasma proteins to unmodified and N-substituted polyacrylamide-modified liposome membrane surface)

IT Blood-coagulation factors

Cell adhesion molecules

Complement

Haptoglobin

Hemoglobins

Lipoproteins

Transferrins

RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(adsorption of plasma proteins to unmodified and N-substituted polyacrylamide-modified liposome membrane surface)

IT Proteins, general, biological studies

RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(blood; adsorption of plasma proteins to unmodified and N-substituted polyacrylamide-modified liposome membrane surface)

IT Drug delivery systems

(liposomes; adsorption of plasma proteins to unmodified and N-substituted polyacrylamide-modified liposome membrane surface)

IT Microglobulins

RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

( $\alpha$ 2-microglobulins; adsorption of plasma proteins to unmodified and N-substituted polyacrylamide-modified liposome membrane surface)

- IT 9003-05-8D, Polyacrylamide, N-substituted derivs. 25189-55-3,  
Poly[N-isopropylacrylamide] 107374-87-8 125998-87-0  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological  
study, unclassified); PEP (Physical, engineering or chemical process); PRP  
(Properties); BIOL (Biological study); PROC (Process)  
(adsorption of plasma proteins to unmodified and N-substituted  
polyacrylamide-modified liposome membrane surface)
- IT 9000-94-6, Antithrombin III 9001-26-7, Prothrombin 9001-91-6,  
Plasminogen 139691-92-2, Proteins, specific or class, serine  
**proteinase-inhibiting**  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL  
(Biological study); PROC (Process)  
(adsorption of plasma **proteins** to unmodified and  
N-substituted polyacrylamide-modified liposome membrane surface)
- IT 57-88-5, Cholesterol, biological studies 18656-38-7, DMPC  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL  
(Biological study); PROC (Process)  
(liposome; adsorption of plasma proteins to unmodified and  
N-substituted polyacrylamide-modified liposome membrane surface)

RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD  
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HCAPLUS
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L84 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2005 ACS on STN DUPLICATE 5  
AN 1998:793630 HCAPLUS  
DN 130:129920  
ED Entered STN: 21 Dec 1998

- TI Signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer
- AU Yamato, Masayuki; Okuhara, Minako; Karikusa, Fumiko; Kikuchi, Akihiko; Sakurai, Yasuhisa; Okano, Teruo
- CS Institute of Biomedical Engineering, Tokyo Women's Medical University, Shinjuku, Tokyo, 162-866, Japan
- SO Journal of Biomedical Materials Research (1999), 44(1), 44-52  
CODEN: JBMRBG; ISSN: 0021-9304
- PB John Wiley & Sons, Inc.
- DT Journal
- LA English
- CC 63-7 (Pharmaceuticals)
- AB We have developed a new cell culture substrate grafted with a temperature-responsive polymer, poly(N-isopropylacrylamide) (PIPAAM) using an electron beam irradiation method. These surfaces are hydrophobic in culture at 37°C due to the hydration/dehydration changes intrinsic to PIPAAM at 32°C, and they become highly hydrophilic below 32°C. At 37°C grafted and ungrafted surfaces showed no difference with regard to attachment, spreading, growth, confluent cell d., and morphol. of bovine aortic endothelial cells. Stress fibers, peripheral bands, and focal contacts were established in similar ways. After the medium temperature was decreased to 20°C, spread cells lost their flattened morphol., acquiring a rounded cell appearance similar to that of cells immediately after plating. After mild agitation cells floated free from the dish surface without trypsin treatment. Neither cell morphol. changes nor cell detachment occurred on ungrafted surfaces. An ATP synthesis inhibitor, sodium azide, and a tyrosine kinase inhibitor, genistein, suppressed cell morphol. changes and cell detachment while a **protein synthesis inhibitor**, cycloheximide, slightly enhanced cell detachment. An actin filament stabilizer, phalloidin, and its depolymerizer, cytochalasin D, also inhibited cell detachment. These findings suggest that cell detachment on grafted surfaces is mediated by intracellular signal transduction and reorganization of the cytoskeleton. While trypsinization causes damage to the cell membrane **surface** and extracellular matrix **proteins**, this alternative low temperature treatment is exceptionally noninvasive. The temperature-responsive cell culture surface also should prove useful for investigating the mol. machinery involved in cell-surface detachment.
- ST polymer temp responsive cell culture surface; signal transduction cell culture surface; cytoskeletal reorganization cell culture surface
- IT Artery  
Artery  
(aorta, endothelium; signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer)
- IT Actins  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(filaments; signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer)
- IT Animal tissue culture  
Cytoskeleton  
**Prosthetic materials and Prosthetics**  
Signal transduction, biological  
(signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer)
- IT 25189-55-3, Poly(N-isopropylacrylamide)



RL: BPR (Biological process); BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer)

IT 9002-07-7, Trypsin

RL: PEP (Physical, engineering or chemical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(signal transduction and cytoskeletal reorganization are required for cell detachment from cell culture surfaces grafted with a temperature-responsive polymer)

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L84 ANSWER 15 OF 20 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN

AN 1998:403884 BIOSIS

DN PREV199800403884

TI Affinity precipitation of alpha-amylase inhibitor from wheat meal by metal chelate affinity binding using Cu(II)-loaded copolymers of 1-vinylimidazole with N-isopropylacrylamide.

AU Kumar, A.; Galaev, I. Yu; Mattiasson, B. [Reprint author]

CS Dep. Biotechnol., Cent. Chem. Chem. Eng., Lund Univ., P.O. Box 124, S-221 00 Lund, Sweden

SO Biotechnology and Bioengineering, (Sept. 20, 1998) Vol. 59, No. 6, pp. 695-704. print.

CODEN: BIBIAU. ISSN: 0006-3592.

DT Article

LA English

ED Entered STN: 21 Sep 1998

Last Updated on STN: 5 Nov 1998

AB A method for purifying alpha-amylase inhibitor from wheat meal based on immobilized metal affinity with a thermosensitive copolymer is developed. The studies represent the thermoprecipitation properties of the copolymers of N-isopropylacrylamide (NIPAM) with iminodiacetic acid (IDA) and 1-vinylimidazole (VI), respectively. The polymer which is obtained by the copolymerization of 1-vinylimidazole and N-isopropylacrylamide, charged with Cu(II), exhibited specific interaction of the metal ions to the **protein inhibitor**. The precipitation was induced by salt and the recovery of the amylase inhibitor was achieved by dissolving the inhibitor-polymer complex in imidazole buffer and subsequent precipitation of the polymer. A single family of the alpha-amylase inhibitor was recovered from the polymer with 89% yield and about fourfold purification. The SDS-PAGE pattern showed significant purification of the inhibitor. The binding of the inhibitor to the Cu(II)-polymer conjugate depends upon the Cu(II) concentration in the copolymer and also upon the concentration of the protein. The recovered polymer could be reused with reasonable efficiency.

CC Food technology - General and methods 13502

Biochemistry methods - Proteins, peptides and amino acids 10054

Biochemistry studies - General 10060

Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Minerals 10069

Biophysics - Methods and techniques 10504

Biophysics - Molecular properties and macromolecules 10506

Enzymes - Physiological studies 10808

Food technology - Cereal chemistry 13510

Plant physiology - Chemical constituents 51522

IT Major Concepts

Bioprocess Engineering; Foods; Methods and Techniques

IT Chemicals & Biochemicals

alpha-amylase; alpha-amylase inhibitor; copper(II); iminodiacetic acid: copolymers; N-isopropylacrylamide: copolymers; 1-vinylimidazole

IT Methods & Equipment

immobilized metal affinity precipitation: purification method; SDS-PAGE [SDS-polyacrylamide gel electrophoresis]: purification method

IT Miscellaneous Descriptors  
wheat meal

RN 9000-90-2 (alpha-amylase)  
15158-11-9 (copper(II))  
142-73-4 (iminodiacetic acid)  
2210-25-5 (N-isopropylacrylamide)  
1072-63-5 (1-vinylimidazole)  
12190-70-4Q (CU(II))  
108334-12-9Q (CU(II))  
120146-54-5Q (CU(II))  
122297-32-9Q (CU(II))

L84 ANSWER 16 OF 20 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on  
STN

AN 1999:135058 BIOSIS

DN PREV199900135058

TI Isolation and separation of alpha-amylase inhibitors I-1 and I-2 from  
seeds of ragi (Indian finger millet, Eleusine coracana) by metal chelate  
affinity precipitation.

AU Kumar, A.; Galaev, I. Yu.; Mattiasson, B. [Reprint author]

CS Dep. Biotechnol., Cent. Chem. Chem. Eng., Lund Univ., P.O. Box 124, Lund  
S-22100, Sweden

SO Bioseparation, (1998) Vol. 7, No. 3, pp. 129-136. print.  
ISSN: 0923-179X.

DT Article

LA English

ED Entered STN: 31 Mar 1999  
Last Updated on STN: 31 Mar 1999

AB The concept of immobilized metal affinity chromatography (IMAC) was  
integrated with affinity precipitation for the single step isolation of  
alpha-amylase inhibitors I-1 and I-2 from the seeds of ragi (Indian finger  
millet, Eleusine coracana). alpha-Amylase inhibitor I-1 was purified  
13-fold with a yield of 84%, using Cu(II) loaded thermosensitive metal  
chelate copolymer of N-isopropylacrylamide (NIPAM) and 1-vinyl  
imidazole (VI). The protein also showed trypsin  
inhibitory activity. The binding of the protein to the copolymer  
was strongly pH dependent. alpha-Amylase inhibitor I-2 was recovered in  
the supernatant as unprecipitated protein with significant purification  
and constituted 27% of the total inhibitor power. The yield with respect  
to inhibitor I-2 was around 85%. Sodium dodecylsulfate-polyacrylamide gel  
electrophoresis (SDS-PAGE) showed significant purification of inhibitor  
I-1 and indicated evident separation of the two proteins on metal chelate  
affinity precipitation.

CC Plant physiology - Chemical constituents 51522  
Comparative biochemistry 10010  
Biochemistry methods - Proteins, peptides and amino acids 10054  
Biochemistry studies - Proteins, peptides and amino acids 10064  
Biophysics - Methods and techniques 10504  
Biophysics - Molecular properties and macromolecules 10506  
Enzymes - Methods 10804  
Food technology - Cereal chemistry 13510

IT Major Concepts  
Enzymology (Biochemistry and Molecular Biophysics); Methods and  
Techniques

IT Chemicals & Biochemicals  
metal chelate copolymers; proteins: isolation, separation; I-1  
alpha-amylase inhibitor: isolation, separation; I-2 alpha-amylase  
inhibitor: isolation, separation

IT Methods & Equipment  
immobilized metal affinity chromatography: chromatographic techniques,

purification method; metal chelate affinity precipitation:  
 Isolation/Purification Techniques: CB, precipitation method,  
 purification method; precipitation techniques; SDS-polyacrylamide gel  
 electrophoresis: analytical method, electrophoretic techniques

IT Miscellaneous Descriptors  
 protein binding; separation technology

ORGN Classifier  
 Gramineae 25305  
 Super Taxa  
 Monocotyledones; Angiospermae; Spermatophyta; Plantae  
 Organism Name  
 Eleusine coracana [Indian finger millet]  
 Taxa Notes  
 Angiosperms, Monocots, Plants, Spermatophytes, Vascular Plants

RN 9000-90-2 (ALPHA-AMYLASE)

L84 ANSWER 17 OF 20 RAPRA COPYRIGHT 2005 RAPRA on STN  
 AN R:617437 RAPRA FS Rapra Abstracts  
 TI NEURAL CELL PATTERN FORMATION ON GLASS AND OXIDISED SILICONE SURFACES  
 MODIFIED WITH POLY N-ISOPROPYLACRYLAMIDE.  
 AU Bohanon T; Elender G; Knoll W; Koeberle P; Lee J-S; Offenhaeusser A;  
 Ringsdorf H; Sackmann E; Simon J; Tovar G; Winnik F M  
 (Gutenberg,University; Munich,University; RIKEN; Max-Planck-Institut fuer  
 Polymerforschung)  
 SO Journal of Biomaterials Science : Polymer Edition 8, No.1, 1996, p.19-39  
 PY 1996  
 DT Journal  
 LA English  
 AB Control over the adsorption of proteins and over the adsorption and  
 spatial orientation of mammalian cells onto surfaces has been achieved by  
 modification of glass and other silicon oxide substrates with  
 poly(N-isopropyl acrylamide) (PNIPAM). The functionalisation of the  
 substrates was achieved either by a polymer-analogous reaction of  
 aminosilanes with reactive N-isopropyl acrylamide (NIPAM)  
 copolymers or by copolymerisation of NIPAM with surface-bound  
 methacrylsilane. The resultant coatings were characterised by FT-IR,  
 ellipsometry, and surface plasmon resonance measurements. The adsorption  
 of two proteins - fibrinogen and ribonuclease - on these surfaces was  
 studied in situ by real time surface plasmon resonance measurements. The  
 PNIPAM-grafted surfaces prepared by either chemical procedure inhibited  
 the adsorption of both proteins. More importantly they  
 prevented the adhesion of neuroblastomaXglioma hybrid cells  
 cultured either in serum-free medium or in a medium containing serum  
 proteins. Deep-UV irradiation was used to perform ablation processes and  
 to create patterns permitting the examination of spatially controlled  
 adhesion and growth of cells. It is shown that patterned ultrathin  
 polymer films on glass are suitable substrates for controlling the  
 interactions of cells with surfaces, capable of directing the attachment  
 and spreading of cells. 47 refs.

CC 42C3.10.1; 6M  
 SC \*QM; KK  
 CT ACRYLAMIDE POLYMER; ADSORBENT; ADSORPTION; COMPANIES; COMPANY;  
 ELLIPSOMETRY; FOURIER TRANSFORM; GRAFT; GRAFTING; GRAPH; INFRA-RED  
 SPECTRA; INFRARED SPECTRA; INFRARED SPECTROPHOTOMETRY; INFRARED  
 SPECTROSCOPY; IR SPECTRA; IR SPECTROMETRY; IR SPECTROSCOPY; IR SPECTRUM;  
 PLASTIC; POLYACRYLAMIDE; POLYISOPROPYL ACRYLAMIDE; POLYMERIC ADSORBENT;  
 PROTEIN; TABLES; TECHNICAL; THERMOPLASTIC; THERMOSET; VIBRATIONAL  
 SPECTROSCOPY  
 NPT GLASS; ISOPROPYL ACRYLAMIDE; SILICONE  
 SHR POLYMERIC ADSORBENTS, isopropylacrylamide polymers, proteins;

ISOPROPYLACRYLAMIDE POLYMERS, polymeric adsorbents  
 GT EUROPEAN COMMUNITY; EUROPEAN UNION; GERMANY; JAPAN; WESTERN EUROPE

L84 ANSWER 18 OF 20 BIOSIS COPYRIGHT (c) 2005 The Thomson Corporation on STN  
 AN 1991:91726 BIOSIS  
 DN PREV199191050616; BA91:50616  
 TI POLYMER-PROTEIN CONJUGATES II. AFFINITY PRECIPITATION SEPARATION OF HUMAN IMMUNE GAMMA GLOBULIN BY A POLY-N-ISOPROPYLACRYLAMIDE PROTEIN A CONJUGATE.  
 AU CHEN J P [Reprint author]; HOFFMAN A S  
 CS CENTER BIOENGINEERING, FL-20, UNIVERSITY WASHINGTON, SEATTLE, WA 98195, USA  
 SO Biomaterials, (1990) Vol. 11, No. 9, pp. 631-634.  
 CODEN: BIMADU. ISSN: 0142-9612.  
 DT Article  
 FS BA  
 LA ENGLISH  
 ED Entered STN: 11 Feb 1991  
 Last Updated on STN: 13 Apr 1991

AB The conjugate of **protein A** with poly(N-isopropylacrylamide) was synthesized and utilized in the separation of human immunoglobulin. In the separation process, poly(N-isopropylacrylamide)-**protein A** conjugate binds to the immunoglobulin with high specificity to form the poly(N-isopropylacrylamide)-**protein A**/immunoglobulin complex. The complex can be conveniently separated by precipitation upon heating above the lower critical solution temperature of the poly(N-isopropylacrylamide)-**protein A**/immunoglobulin complex. The separation capacity of poly(N-isopropylacrylamide)-**protein A** conjugate for human immunoglobulin was studied and it was demonstrated that approximately one out of every four **protein A** molecules binds to human immunoglobulin with a dissociation constant (Ks) of  $3 + 10^{-6}$  M. The affinity precipitation separation of human immunoglobulin is a rapid process which avoids the need for chromatographic columns. It can also be designed to run in a continuous mode.

CC Clinical biochemistry - General methods and applications 10006  
 Biochemistry methods - Proteins, peptides and amino acids 10054  
 Biochemistry methods - Carbohydrates 10058  
 Biochemistry studies - Proteins, peptides and amino acids 10064  
 Biochemistry studies - Carbohydrates 10068  
 Biophysics - Methods and techniques 10504  
 Biophysics - Molecular properties and macromolecules 10506  
 Immunology - General and methods 34502

IT Major Concepts  
 Biochemistry and Molecular Biophysics; Clinical Chemistry (Allied Medical Sciences); Immune System (Chemical Coordination and Homeostasis)

ORGN Classifier  
 Hominidae 86215  
 Super Taxa  
 Primates; Mammalia; Vertebrata; Chordata; Animalia  
 Taxa Notes  
 Animals, Chordates, Humans, Mammals, Primates, Vertebrates.

RN 25189-55-3 (POLY-(N-ISOPROPYLACRYLAMIDE))

L84 ANSWER 19 OF 20 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 1982-09601J [51] WPIX  
 TI Protective sealing compsn. for ostomy devices etc. - containing fumed silica and irradiation crosslinked polyacrylamide to impart resistance to drained

fluid and a good wet and dry tack.

DC A11 A14 A96 B05 D22 P32 P34

IN HABIB, W W

PA (HOST) HOLLISTER INC

CYC 6

PI EP 66887 A 19821215 (198251)\* EN 11

R: DE FR GB

DK 8202581 A 19830411 (198321)

US 4534767 A 19850813 (198535)

NL 189646 B 19930118 (199305) 8 A61F005-44

ADT US 4534767 A US 1981-272191 19810610; NL 189646 B NL 1980-5990 19801031

PRAI US 1979-90855 19791102; US 1980-185003 19800908;

US 1981-272191 19810610; US 1985-725318 19850419

REP DE 2822535; FR 2468355; GB 2038661; GB 2046773; GB 2062663; No-SR.Pub; US 3302647; US 3954105; US 3980084; US 4115339; US 4187851; US 4204540; WO 8001138

IC ICM A61F005-44

ICS A61L015-06

AB EP 66887 A UPAB: 19930915

A protective sealing compsn. for application to the sin in moulded form and of the type composed of a mixture of a gellable water-absorbing particulate hydrocolloid gum (I) and a non-toxic polyhydroxy alcohol (II) also contains (a) 1-3wt.% formed silica together with (b) 5-20wt.% **polyacryamide** resin, the moulded compsn. having been subjected to gamma-irradiation to crosslink (b).

The compsn. can be used in the form of moulded rings or sheets for sealing ostomy, wound drainage or incontinence devices. The presence of (a) increases the mechanical endurance of the compsn. when it is exposed to intestinal fluids and/or urine. This effect is achieved without appreciable loss of wet tack. Any resulting loss in dry tack due to the presence of (a) is overcome by incorporation and crosslinking of (b).

FS CPI GMPI

FA AB

MC CPI: A04-D04A; A12-V03; D09-C

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AN 1980-08048C [05] WPIX

TI Liquid deodorant comprising sodium acrylate in aqueous medium - with high effectiveness over long periods.

DC A96 D21 D22 E12 P34

PA (NONC-N) NONCHI KK

CYC 1

PI JP 54157833 A 19791213 (198005)\*

JP 60013702 B 19850409 (198518)

PRAI JP 1978-65420 19780531

IC A61L009-01

AB JP 54157833 A UPAB: 19930902

Liquid deodorants comprise an aqueous medium and sodium acrylate as the active component. Compsns. are highly effective over long periods of time.

Pref. the aqueous medium is water and opt. an organic solvent (e.g. alcohol, ketone, ether, ester). The deodorant is prepared by dissolving the active component in the aqueous medium. Since the deodorising effect is not obtd. when the concentration of the Na acrylate is too high, the deodorant is used as a dilute aqueous solution It is possible to use Na acrylate in

combination

with Na polyacrylate, acrylamide, **polyacryamide**, Na acrylate-acrylamide copolymer, etc., and the combination may increase the deodorising effect. The viscosity and stability of the liquid can be improved by adding glycerine, ethylene glycol, Na CMC, methylcellulose, hydroxyethylcellulose, surfactant, aroma- or pH-adjusting agent fungicides

or antiseptics. Prods. can be used as toilet dust boxes, kitchen  
refrigerators shoes or underarm deodorants.

FS CPI GMPI

FA AB

MC CPI: A12-D; A12-V04; A12-W; D09-B; E10-C04G

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